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International Journal of the Commons
Vol 2, no 1 January 2008, pp. 127-154
Publisher: Igitur, Utrecht Publishing & Archiving Services for IASC
URL: http://www.thecommonsjournal.org
URN:NBN:NL:UI:10-IJC/08007
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ISSN: 1875-0281

A multi-level perspective on conserving with communities: Experiences from upper tributary watersheds in montane mainland Southeast Asia

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Abstract: Many of the critical tensions around conservation with people in upper tributary watersheds involve challenges of scale. Ecosystem goods and services derived from these watersheds are frequently used and valued by people at several different spatial levels, making these resources difficult to manage effectively without taking cross-level interactions into account. A multi-level perspective allows a more nuanced understanding of the governance challenges in conservation. Rather than assuming that the correct and best levels are known, we look at how discourses and social practices privilege certain levels over others and help shape the way decisions are made.

A multi-level perspective also helps explain why the expectations of different actors are hard to satisfy, and why projects are often perceived as failures by some but not all actors. Some of the differences are a result of looking at the system from different levels, others are the result of the failure to acknowledge important cross-level interactions, and yet others arise from over-reliance on single-level theories. An improved understanding of scale-related politics in conservation creates opportunities for evolving more appropriate institutions to the challenges at hand.

Keywords: Scale, community-based, conservation, politics, watersheds, southeast Asia

1. Introduction

Much of the remaining native forest cover important for conservation of terrestrial biodiversity in mainland Southeast Asia is in upper tributary watersheds (Thomas 2002; Xu and Wilkes 2004). Home to a diversity of cultures, these mountain areas are

in the throes of an unusual combination of economic, political and social transformations arising from the multi-level impacts of globalization. The future of both landscapes and societies remains profoundly uncertain (Lebel 2006a).

Local community involvement and commitment to conservation planning and management is needed because state authorities working alone have often been ineffective and unfair (Vandergeest and Peluso 1995; Sato 2003; Vandergeest 2003). Problems of inadequate personnel and budgets, poor knowledge of local ecosystems, and lack of clear conservation objectives and monitoring abound (Roth 2004). Arbitrary, discriminatory and corrupt practices have left poor farmers, often from ethnic minority groups, bearing much of the burden and few of the benefits of provincial, national and international conservation policies (Wittayapak 1996; Laungaramsri 2002).

At the same time it remains unclear if local community involvement will, in general, strengthen or dilute conservation efforts and what impacts such engagement might have on poverty alleviation (Walker 2004b). For instance, if local governments and communities view conservation programs as uncompensated loss of access to resources or barriers to development, their support should not be expected (Li 2002).

Issues of scale appear near the centre of many of the critical tensions around conservation with people. Ecosystem goods and services derived from upper tributary watersheds are used and valued by people at several different spatial levels (Millennium Ecosystem Assessment 2005). Does use at one level impact other levels? If so, how should cross-level interactions be managed? Which rights and responsibilities should be allocated to which levels of social organization? How should decisions about interventions at particular levels be reached?

Following the framework laid out in Gibson et al. (2000) and elaborated by Cash et al. (2006), scale is defined as the spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon, and levels as the units of analysis that are located at different positions on a scale. In Figure 1 we identify three fundamental scales important to conservation in upper tributaries. Each of these scales is hierarchical in that a higher level usually contains within it all the entities at a lower level.

A common assumption has been that an institutional model borrowed from elsewhere, for instance a land tenure regulation, can just be dropped into the institutional and administrative milieu without consideration of political systems or pre-existing, formal and customary institutions (Evans 2004). What has been repeatedly observed instead of the expected replacement or simple adoption has been interplay among newer and older institutions during which both may change as a result of their interactions (Young 2002a). Interplay, intended and unintended, can be constructive, destructive or irrelevant to livelihood and conservation objectives: in the case of multi-level forest management regimes in Asia all patterns are possible (Agrawal and Ostrom 2001; Contreras 2003; Kumar and Vashisht 2005; Lebel 2005).

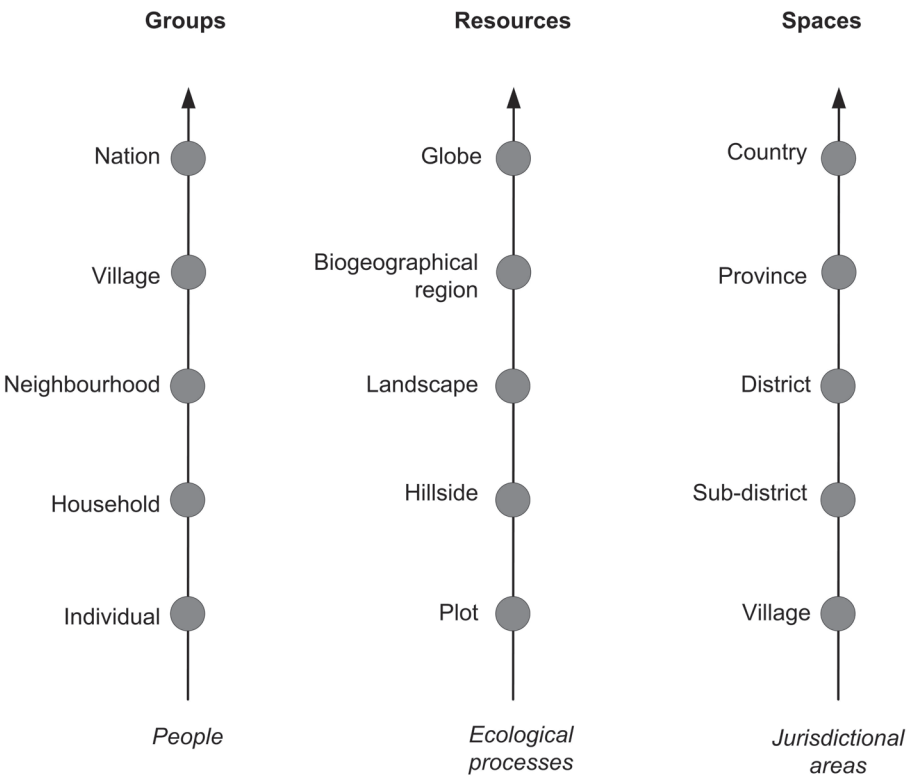

Figure 1. Three scales important to conservation in upper tributary watersheds. Examples of possible levels are shown with circles. Labels underneath each scale indicate entities being aggregated as move up levels.

On the resources scale, the parallel assumption has been that conservation of different species or ecosystems that are used at different levels (Figure 1) can be managed without reference to each other – as if there were no cross-level interactions in biophysical processes (Berkes 2002; Ostrom 2003; Berkes 2004). The Millennium Ecosystem Assessment (2003, 2005) by taking a multi-level approach showed that this simplification is deeply misleading for many valued services (Lebel 2006b).

Although we focus on multi-level interactions here, joint consideration of both social and ecological scales opens the possibility for not only cross-level interactions within a scale but genuine cross-scale interactions (see Lebel and Imamura 2006). We use the phrase 'politics of scale' in this paper to describe situations whereby actors, directly or indirectly, attempt to shift the levels of study, assessment, deliberation and decision-making authority to the level and scale which most suits them, that is, where they can exercise power more effectively (Lebel et al. 2005).

In this paper we show that adopting a multi-level perspective allows for a more nuanced understanding of the governance challenges arising in the management of upper tributary watersheds for conservation purposes. Rather than assuming that the correct and best levels are known, we look at how discourses and social practices privilege certain levels over others and help shape the way decisions about levels and scales are made.

To help cluster these observations of the many different ways scales and levels are created, built and modified, we organize the text around a small number of common patterns or mechanisms (Table 1). For instance in considering the group scale, we identified the issue of how group boundaries were set, who and how groups were subsequently represented, and the justifications for particular groupings as a helpful way of describing the scale politics (Table 1). Each of these mechanisms will be discussed in more detail in the text that follows.

Table 1. Mechanisms by which scales and levels are contested in conserving with communities.

Scale	Mechanism	Explanation
Groups	Bounding	Community boundaries are defined and shaped by projects and programs in conservation
	Representing	Procedures for representing communities are often deeply flawed, overlooking heterogeneity and disadvantage.
	Justifying	Communities engage in conservation for different reasons; state and non-government organizations seek support from communities for various reasons as well.
Resources	Using	Watersheds provide goods and services at multiple levels used by different groups.
	Understanding	Understanding of the impacts of use and management at multiple-levels is improving but still modest and filled with uncertainties.
Spaces	Classifying	The way in which categories are defined and different instances aggregated is resolution-dependent and contested.
	Zoning	Communities contest zoning and alternative spatial logics for how different uses should be allocated across landscapes they use or traverse.
	Administering	Administrative hierarchies, decentralized or not, frequently have poor cross-level links for integrating information and accountability

The main body of the paper is organized around the three scales identified in Figure 1. The scales correspond approximately to questions about who and why (groups), what (resources), and where (spaces). Each of the scales is discussed in turn, first explaining in more general and theoretical terms how the scale and its levels are created or discovered, and then illustrating key points through experiences with conserving with communities in upper tributary watersheds of montane mainland southeast Asia. Within each scale observations are organized

around the kinds of mechanisms involved (Table 1). This is followed by a short section that brings together the three scale stories and identifies some of the main implications for theory and practice. The paper concludes with a brief summary of the strengths and limitations of the multi-level perspective.

2. Groups

Many, but not all, social groupings can be arranged in hierarchies of successively increasing inclusiveness (Figure 1). Efforts to conserve with communities promote and assign a role in conservation for a social group at the level of the community. Exactly where the community level sits on the social group scale, however, is contested and as a consequence shaped by various discourses, decisions and practices (Figure 2).

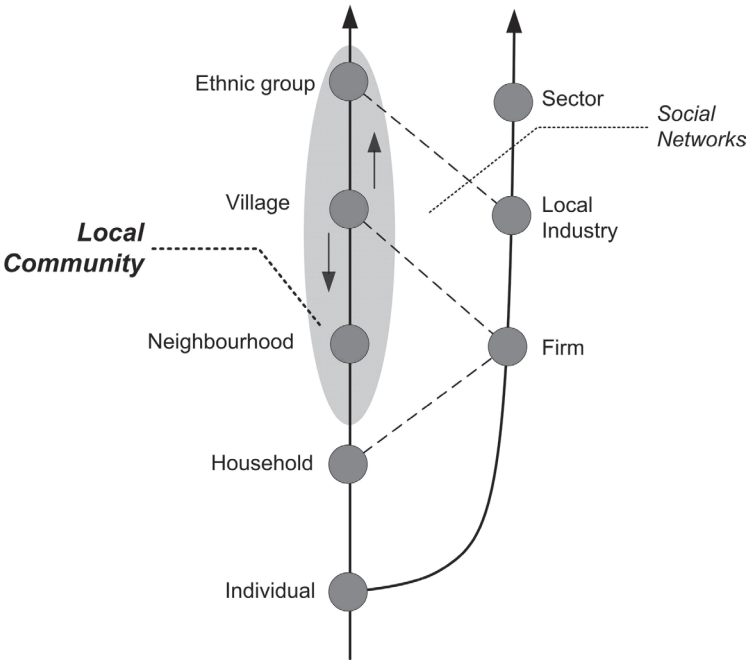

Figure 2. Where 'local community' is situated on the group scale is a product of interactions of actors at different levels and social networks that bridge different scales.

Bounding

Conservation projects and programs make choices about how to set bounds on a particular community or a set of communities. The focal effort in community-based natural resource management and conservation initiatives is typically at the level of a single or a few neighbouring villages often labelled as the 'local community' (Figure 2).

These choices in conservation practice draw on commons discourse that defends and promotes 'local community' as the critical level for effective management of common pool resources (Purcell and Brown 2005). Images of coherent, knowledgeable and peaceful villages form a key part of these narratives. As Agrawal and Gibson (1999) put it: 'Outside the community conflicts prevail; within harmony reigns.' Forming groupings that will be perceived as coherent and cooperative is important to successful marketing of conservation and forest management projects. These activities may take place with little actual change in social practices or effective control of forest resources across levels (Peluso 1992).

Wealth, mobility, networks and environmental politics help set bounds on local communities. Communities chosen for conservation efforts are usually poor villages; rarely are wealthier rural towns included except as providers of tourism services. Some conservation programs promote policies which block development and keep the poor, poor (Dove 1993) although few projects would outwardly claim such objectives. In negotiating boundaries across levels, powerful actors can easily include (or exclude) groups of poor without political power to bargain for continued resource access (Peluso 1992).

Seasonal migrants and others with mobile livelihoods, for example, forest pastoralists, collectors of medicinal plants or hunter-traders based on wildlife and animal meats or parts pose additional problems for delineating the membership of communities but are very important to conservation (Rao et al. 2005). Individuals may identify themselves with multiple communities. For example, if part of a household lives and works in a lowland town permanently or part of the year, even cultural identities may be switched back and forth depending on their current location.

Social networks can create livelihood opportunities as well as form the basis for environmental movements across different hierarchies. In Figure 2 this is illustrated by horizontal social network links between a social scale related to culture and an upland location and another scale based on commercial industry organization. A specific example of the links between uplands, ethnic group and local industry in northern Thailand is the development of the Hmong upland cabbage industry and more recently environmental networks to counter lowland criticisms of their upland farming practices (Tomforde 2003).

Finally, communities can end up as by-products of cross-level environmental as well as cultural politics. A good illustration of this is the emergence of provincial-level designated conservation areas, co-managed by communities in Ratanakiri province in Cambodia. The 'community' in this case was the commune level encompassing a series of villages of different ethnic minority status. In 1995, the Governor of Ratanakiri province declared eleven local sites as special areas for conservation of natural resources and promotion of eco-tourism even though national legislation provided no provisions for provincial-level protected areas

(Ojendal et al. 2001). The move was, in part, a response to the central government intent of handing over a huge 1.4 million-hectare forest logging concession covering almost the entire province to the Macro Panin Company. In 1997, the Governor and representatives of Tampoeun ethnic minority communities signed a 25-year lease devolving responsibility for management (Ojendal et al. 2001). However, by 2005 most of the eco-tourism sites were no longer recognized (Tyler 2006). The community conserving forests in this case did not just respond to higher-level pressures for conservation but in an important sense was manufactured by them.

Discursive strategies deployed in conservation efforts aim to expand the extent of territory to which they apply by linking conservation with agricultural development and other livelihood and resource use objectives (Zimmerer 2006). Communities become part of conservation plans, and hence, more governable. Community boundaries are defined and shaped by projects and programs in conservation.

Representing

Conventional notions of the state as laying above society and encompassing local communities are used to legitimize their authority (Fergurson and Gupta 2002). No matter how community is bounded by projects to engage and influence higher levels in administrative hierarchies usually requires representation of some kind. Heterogeneity within and among communities poses governance challenges, as consensus on objectives and unity of interests are hard to justify.

Local communities are often more heterogeneous than conservation projects portray them (Agrawal and Gibson 1999). One household is living off cash crop receipts while the next subsists on crops grown in swidden fields and other items gathered from secondary forests. Villagers are not just foresters or farmers; they may also be construction workers, commercial sex workers, maids and tour guides. Some are poor and marginalized, whereas others are, relatively, rich or powerful in village affairs. Men and women, older and younger people in the same household can have different interests in how resources are used and managed. Women, for example, often have a larger role in collecting and managing certain non-timber forest products including medicinal plants that were often treated as shared common property at village levels.

Villages can be divided, or more often differ, by ethnicity, religion and kinship organization as well.

Depending on overall budgets, a conservation model may be applied to a single demonstration village or replicated village-by-village over much larger administrative areas. This is scaling-up a level of a restricted sort, as often the goals and rules of management remain uniform and constrained to village-level considerations. Large differences among villages can have major implications for effectiveness of conservation if the assumption ‘one-size-fits-all’ (cf. Evans 2004)

doesn't hold, for example, because of differences in resource dependency or level of stakes.

Ignoring such differences poses several risks to conservation projects. Firstly, failing to acknowledge variation within communities increases the likelihood that project benefits, burdens and involuntary risks become distributed unfairly, because patterns of access resulting from existing local power structures are simply reproduced. Secondly, ignoring heterogeneity among villages or communities makes it hard to anticipate the aggregate outcomes of cross-level interactions. Local communities are heterogeneous and this has impacts on relationships for community management with other levels.

Heterogeneity makes the issue of representation of communities politically salient (Brosius et al. 1998). Local government reforms throughout the region have created new opportunities for local communities to have their interests represented directly in formal political structures (Xu and Ribot 2004; Garden et al. 2006b). For the most part, these shifts do not apply to protected area management -- that remains the responsibility of specialized line agencies. Nevertheless, very significant areas of land for conservation are, or could one day become, under management of local government. What is still far from clear is whether this shift of decision-making from higher to lower levels will translate to 'long-term conservation'. Expectations about 'community-based' programs and projects may have unrealistic expectations about the willingness of, and value to, people of conservation. Procedures for representing communities are often deeply flawed, over-looking heterogeneity and disadvantage.

Justifying

Communities engage in conservation for a number of reasons, including: continuation of traditional practices that happen to be low impact or sustainable; to maintain access or control; as an adaptive response to degradation or decline in a critical resource; in response to project funding opportunities; because they are coerced; and, as a strategic negotiating position to secure other rights (Agrawal and Gibson 1999; Li 2002; Berkes 2004).

Explicit management efforts at the community level may emerge after problems of over-exploitation or a crisis (Wittayapak and Dearden 1999; Sothea and Kolvira 2000; Lebel et al. 2006b). External threats may act as a driver for conservation. This is because conservation may provide benefits, in terms of alliances at higher levels, to counteract external threats.

Consider the example of the Jarai people of Som Thom commune in O'Yadao district in Ratanakiri province who continue to depend on rotational cultivation and collection of forest products (Ojendal et al. 2001). Decline in natural resources, mainly due to logging, reached crisis point when in 1994 an oil palm company entered with a 20,000 hectare 'land concession' to turn the entire Som Thom commune into a palm plantation. This threat catalysed efforts at local commune

level, and across diverse interests to initiate a 'community forest'. Threats to the community forest were met by a combination of self-organization at lower levels and support from non-governmental organizations and authorities at higher levels (Ojendal et al. 2001).

Both state agencies and non-governmental organizations regularly seek the support of communities for their conservation programs (Morris et al. 2004). Public participation is an important instrument in gaining public acceptance, legitimacy and commitment to their ideas and policies at local community levels. Communities may respond favourably to requests by state agencies for their participation, in part, because of the side-benefits that come with the bargain. Cooperating with local government and line agencies can result in state agencies providing, often for the first time, useful public services like schools, health facilities and road or telecommunication infrastructure. Inclusion may be recognized and valued. Inclusion, in turn, can produce individuals having multiple roles or 'identities' and community memberships.

A case can be made that upland zoning for conservation in most countries in the region (apart from Yunnan province of China) has its origins in colonial timber exploitation (Bryant 1997; Roth 2004), the Cold War politics that played out in the region, and ongoing concerns of governments about national security and trafficking in narcotics as well as humans (Bryant 1998; Renard 2001). The last-mentioned helps explain the persistence of a coercive element to state conservation logic which does not exclude the use of force (Lopez 2002; Vandergeest 2003).

In northern Thailand, for instance, cooperation may have helped secure citizenship or maintain de facto rights to settle (Vandergeest 2003; Roth 2004; Daniel and Lebel 2006). Farmers in the northern highlands of Vietnam may be adopting conservation measures promoted by state projects not for economic or conservation benefits but more as a strategy to assert claims for long-term use rights (Neef 2001). But long-term use rights is not always a critical factor; social image-building as conservationists is as important (Santasombat 2004; Walker 2004a).

Farming practices of the Hmong people in northern Thailand are often blamed for upland forest destruction. The Hmong in Mae Sa Mai community, Mae Rim District, Chiang Mai Province, has been at the centre of efforts to form an environmental network spanning watersheds, villages and clans that promotes forest conservation efforts and rituals (Wanishpradist 2005). Conservation in this case is not simply a strategy for tenure security – since the Hmong know that the forestry department would not allow long-term land entitlements in the watershed areas – but also of improving the social image of the Hmong people as conservationists (Tomforde 2003).

There are two related but distinct activities captured by the term 'representing.' In the previous section we focussed on representing as speaking on behalf of the community. This last example, however, is more about how a community represents itself to the rest of the world.

Accepting higher level rationales for conservation, however, may also result in unwittingly accepting other discursive strategies of state agencies. For instance a shift in management responsibility to local communities can also bring with it blame for poor conservation outcomes and the burden and responsibility of renewing ecosystems that are already degraded. The shift from higher to lower levels may also signal acceptance of central or dominant identities in terms of culture and language as states bring peripheries more under their control through joint management commitments and side-benefits, like education for children.

Communities engage in conservation for different reasons; state and non-government organizations seek support for communities for their conservation programs for different reasons too (Table 1). A multi-level perspective on who and for whom conserving with communities is done underlines that the notion of community in conservation planning and management as primarily local in extent, fixed in position, united in goals and motivation, and separate from the state, is not easily defendable. The conventional wisdom that local community resource users have the highest stakes in conservation is not always valid; significant stakes exist at multiple-levels. Moreover, key actors have to manage constraints in trying to represent their interests while their self-representation opportunities are few and level-restricted.

3. Resources

The spatial organization of ecosystems across landscapes, in particular, the role of landscape organization as barriers and connections to movement, has a profound impact on the viability of local animal and plant populations: for forms of life restricted to streams and rivers, the importance of connectivity is even more obvious. The services provided by ecosystems in upper tributary watersheds can unfold on levels from a patch on the hillside through to regional basins for many aspects of the hydrological cycle, through to global in the case of the carbon cycle (Figure 1). Cross-level interactions are a fundamental feature of ecological and biogeochemical processes (Figure 3). Such interactions have profound implications for attempts at management and conservation by society at any level.

Using

What programs and projects aim to conserve with communities varies greatly. National policies can be vague and holistic in their preservationist discourse about nature, biodiversity and services important to human well-being. Resource user groups on the other hand may have very specific goods in mind for community-level management. Different social groups set objectives at different spatial levels with respect to the scale of ecological processes (Figure 1).

Watershed ecosystems provide goods and services at multiple levels (Bonell and Bruijnzeel 2005).

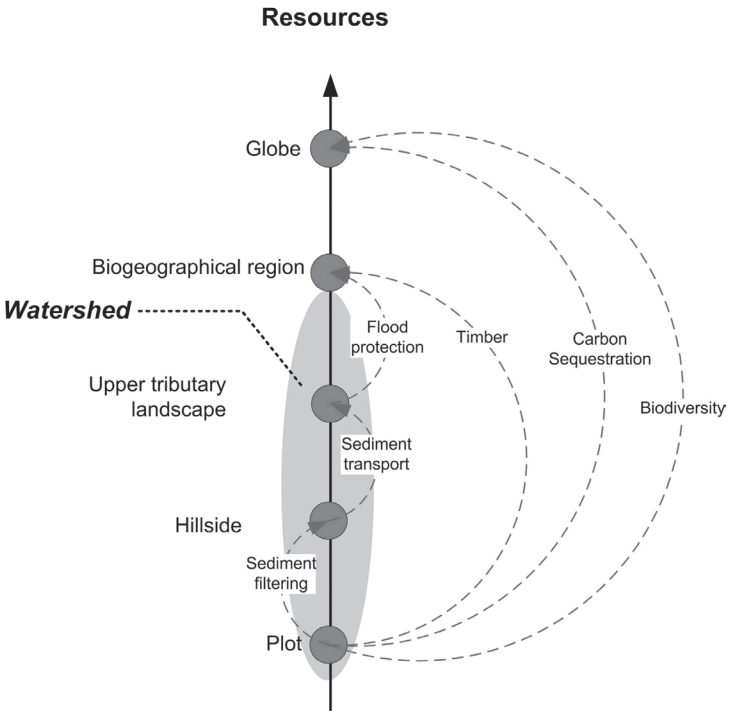

Figure 3. Upper tributary watersheds, apart from being habitat for in situ conservation of biodiversity, also provide ecosystem goods and services valued at other levels.

Some ecosystem functions are highly resilient whereas others are less so and this can vary with level (Lowe et al. 2006). For example, many hydrological and soil conservation functions may be met in modern or traditional agro-forestry landscapes as in low-intensity use forests. Even fruit orchards may contribute significantly. Capacities to maintain and conserve biodiversity with such land-uses may vary hugely depending on the kinds of organisms present. Many plant varieties are found across a mosaic of different land uses in upland watersheds typically in which long-fallow cycle swidden agriculture is practiced (Schmidt-Vogt 1998; Fox et al. 2000; Xu and Wilkes 2004). At the same time, such areas are often not good habitats for larger wildlife species which are also sought after by hunters (Rao et al. 2005) or lead to human-wildlife conflicts (Nyhus and Tilson 2004).

There is a tension between local communities setting watersheds boundaries at levels at which they are comfortable with and the organizational interests of natural resource management agencies (Figure 1 and 3). These latter interests are quite diverse in the case of Thailand, with for example, the newly created Department of Water Resources promoting integrated watershed management that

places itself at the centre of everything, and traditional line agencies responsible for forests or irrigation resisting such integration. In democratic settings the result is a fluid, negotiated compromise, balancing knowledge, interests, and administrative and political plausibility.

Local rules in use emerge from, and get folded back into, practices. One of the visions and challenges of modern environmental governance has been to try and retain or recreate those features of local institutions which show a reasonable fit with ecological processes but still allow use and, to combine these with visions and commitments at much broader levels, including the global (Berkes et al. 2003; Folke et al. 2005; Lebel et al. 2006a).

In practice, however, most initiatives of the state with respect to land resources have been static and simple (Scott 1998; Li 2002) bundling rights to different stocks and flows based on plots to which title can be given. Pwo Karen communities in Om Koi district of northern Thailand, for example, often distinguish household, kin and village-level rights to harvest particular items from paddy, upland fields, and community forest areas. Rules vary from place to place and are not always present, for example, if a resource is locally abundant (Lebel et al. 2003). Land reform that is now confined to the main valleys is reinforcing changes already underway as a result of greater market integration. The policy debates continue, however, on the desirability of formally recognizing land tenure of individuals as opposed to collectives or whether it is best to keep land in upland areas as some form of common property (Leonard and Ayutthaya 2003; Sato 2003; Lopez 2004; Castella et al. 2005; Ducourtieux et al. 2005; Daniel and Lebel 2006).

The way communities use resources has a large bearing on what can actually be conserved at different levels. Moreover, the capacity of communities, to actually manage other living organisms, their habitats, or what activities people do in them with local institutions, is easily over-stated. Understanding of cross-level interactions in ecological process in both local communities and expert-laden national resource management agencies is often surprisingly weak.

Understanding

Scientific understanding of biophysical scale issues arising from or impacting upon upland watershed ecosystems and their resource dynamics is modest, but improving. Cross-level interactions between resources and users can produce complex dynamics especially if level of key processes is misjudged (Young 1994; Cumming et al. 2006). Among lay communities self-serving myths about cause-and-effect and scale transferability of anecdotal observations abound.

Efforts to conserve biodiversity must often take into account cross-level interactions that may be specific to the good or service to be conserved. Intensively sought-after and harvested resources like the Matsutake mushroom have complex social-ecological dynamics that challenge policy-making at different levels (He

2006). Maintaining viable populations of large mammals like tigers pose similar scale problems. Tigers require vast areas of contiguous forests, including quality habitat along streams with good cover where prey are abundant. Long-term conservation requires maintaining habitat connectivity. In the case of major wildlife populations in Burma/Myanmar, this means conserving forests across national boundaries requiring international level cooperation (Lynam et al. 2006). At the same time a significant contribution to conservation of some functional types of plants species may be compatible with more intensive use, underlying the importance of taking scientific inventories and assessments beyond patches of mature forest in the middle of national parks (Gillison and Liswanti 2004).

Much of the uncertainty in science and misunderstandings in watershed policy has been in equating forests with trees (Bruijnzeel 2004; van Noordwijk et al. 2004). Although scientific understanding of how different land-use activities impact soils, litter layers and other attributes of forests and forested landscapes has improved greatly in the past two decades, not much of this new knowledge has been incorporated into natural resource management, and especially forestry, bureaucracies in the region.

Scientific understanding of the hydrological consequences of changes in land-use in upper tributary watersheds is also intentionally misrepresented to achieve consistency with other upland management and development objectives (Forsyth 1998; Walker 2003; Blaikie and Muldavin 2004). Floods, erosion, sedimentation and dry season water shortages are all blamed on upstream activities by those living downstream. Often this is done with no consideration of rainfall intensities, flood plain modification and building practices in the lowlands (Manuta et al. 2006), erosion from natural landscapes and roads in the uplands (Forsyth 1996; Forsyth 1998; Ziegler et al. 2004) or water use downstream (Walker 2003). Although much of this starts as a politics of position (upstream vs. downstream) rather than scale per se, actors downstream have been very effective at using these impact arguments to up-scale levels of planning and management of river basins (Lebel et al. 2005).

Ecosystem goods and services, resources, and biodiversity more generally, are not single level and independent. They are used and valued at different spatial levels from those at which they may be ruled and managed. Managing for one service at one level has impacts on other services at other levels. This mismatch is a source of political contest. It can be hard to manage for one service at one level without (unintentionally) impacting on other services at other levels.

4. Spaces

Where, and at what level, conservation with communities takes place depends on a large number of factors that together impact land-use and management (Lambin et al. 2001; Thomas 2002; Xu et al. 2004). In this discussion here we focus on classifying and zoning because it is around these activities that discourses, prac-

tices, and decisions influence planning and management activities located along the administrative or jurisdictional area scale (Figure 1, Table 1).

Classifying

How states define 'forests' and then classify forest lands has a major bearing on institutional designs for their management (Contreras 2003; Lebel et al. 2004). In Thailand, forest lands were conceived from the presence of trees and green cover using aerial maps with the result that large areas of farmlands were caught inside 'forest reserves' and millions of farmers became 'illegal squatters' (Hirsch 1995; Vandergeest and Peluso 1995; Vandergeest 2003). Similar forms of demarcation logic have unfolded in Laos PDR (Sowerine 2004).

How local communities classify forests can be dynamic. The Jinuo people in southwest China have developed a folk classification system of forests by which their community forests are classified into eight categories (Long and Zhou 2001). The different community forest types, traditionally managed under folk regulations, have now been overlain by rules originating at local and district government levels. The management of community forests has changed and new forest categories have been added. Most upland cultures in the region have evolved traditional systems of forest classification which they use in managing above the individual farm plot scale (Laungaramsri 2002; Santasombat 2004).

Community-level mapping is an important tool for both watershed management and conservation more narrowly. Many successful experiences with participatory mapping and land-use planning at small to moderate spatial levels have now been documented across Southeast Asia (e.g. Fox et al. 2000; Thomas et al. 2000; Thomas 2005b). So far, however, it has proven difficult to institutionalize the relationship with administrative planning procedures at higher levels (Tan-kim-yong et al. 2005).

The choice of how to define watershed boundaries, over what to include, exclude and ignore, and at what spatial extent to count sub-basins or basins and so on, is not given by nature but something which has to be decided (Blomquist and Schlager 2005). Consider for example the decision about where to designate the downstream end of the finest resolution sub-basin for management purposes, or how inter-basin transfers, and transboundary watercourses are to be handled. Given the importance of claims about boundaries, levels and resolutions in water resource management, it is not surprising to find many examples of spatial politics including scale. Upper tributary watersheds in mountain areas have a special position, being upstream of virtually everyone else with power; as a result the spatial politics are strongly dominated by discourses about purported negative impacts of upstream activities on downstream locations. At the same time, the way these impacts are addressed is often by re-scaling them to higher levels (Sneddon et al. 2002; Lebel et al. 2005; Hirsch 2006).

In Thailand watershed classification has been used as a policy tool to cut across and override other categories. 'Watershed', according to Laungaramsri (2000), is a construct of the state that is used primarily to justify control of upland resources. The 1985 classification is based on overlays of available maps for soils, topography and forest cover that was used to classify each km2 in the watershed 'zone' into six categories (Pratong and Thomas 1990). In practice rather modest information was available on soils for the 'topographically complex' upper tributary watersheds. Although proportions of land in classes with severe restrictions appear modest at the national level, this proportion increases rapidly in the upland areas that predominate in northern Thailand underlining the importance of the spatial level at which conservation objectives are set and monitored (Suraswadi et al. 2005; Thomas 2005a).

Systems of land and land-use classification are one of the fundamental instruments through which communities and natural resource management agencies express their scale choices. Aggregation of instances of a class become the basis for defining areas for conservation – an activity we label with the short-hand zoning – even though it can involve a variety of assumptions about appropriate resolution.

Zoning

Where, and at what level, conservation should take place is subject to several spatial logics. Zonation argues that productive agriculture and plantation forestry are not compatible with conservation and must be segregated spatially. Dynamic mosaic claims that multiple conservation objectives can be met on landscape where an overall balance between mature and secondary forests as well as cropped areas is maintained even though individual patches may change land cover and use over time. Sustainable use paradigm integrates conservation and use functions at very low spatial level, for example, as in community forests with native and domesticated trees. Watershed integration argues that relationships between different land-use zones can be managed to strengthen complementarities of services provided, for example, by value-adding, trade or payments for services.

Each of the spatial logics requires decisions about where to locate planning and management activities along the administrative area scale (Figure 1). For example, conservation plans that include but extend well beyond restricted use protected areas could span several districts, provinces or even across national borders. The boundaries are often drawn by small groups of experts, but to be consequential, have to be negotiated with authorities with jurisdictions at various levels.

The conventional approach to conservation of biodiversity has been through protected area systems and there is little doubt that they have helped slow down rates of global biodiversity loss (Bruner et al. 2001). Local communities, however, have often had to, and unfairly, bear most of this burden; in some cases, the

resulting feedbacks undermine the value of these highly restricted use areas for conservation (Vandergeest 1996; Locke and Dearden 2005).

State agencies may by removing people with a high stake in conservation from management, undermine stated conservation objectives. For example, in North Vietnam, the state ignored the rich ethno-botanical knowledge of the Dzao ethnic community when it resettled them in a buffer zone to make way for the Ba Vi National Park and did not include them in park management (Sowerine et al. 1998). Each Dzao family was given small plots of forest lands 0.5 to 4 kilometres from the village where acacia and eucalyptus tree species were planted. But the Dzao find the trees useless as the paper mills are too far away to make harvesting economically viable. The Dzao people continue to enter the forest for collecting non-timber forest products (NTFPs) especially medicinal herbs and plants despite their access to park resources being closed off. It is becoming evident that forest-dependent communities need to be included in management if there is to be effective regulation of local use practices. The Dzao's intimate ethno-botanical knowledge of Ba Vi's environment favourably position them to succeed in re-establishing forest cover and share the Park's management goals of conserving indigenous plant species.

Regulation of hunting by people for food and trade is also critical. Studies in and around Hkakaborazi National Park in northern Burma/Myanmar, for example, underline how hunting, often using snares, is largely opportunistic and indiscriminate, making it hard to protect particular vulnerable species and resulting in wastage (Rao et al. 2005). Demarcation of no-take areas within the buffer zone are common recommendations. At the same time alternative livelihood options for local populations near parks in Burma/Myanmar are often extremely limited (Rao et al. 2002). Local communities clearly need to be involved in management (Rao et al. 2002) but it is not always so easy to see how they can benefit from such engagement.

Efforts to include local communities and indigenous peoples in protected area management intensified through the 1980s and resulted in a range of initiatives between country governments, their forest agencies and local communities (Nepal 2002). Many of these went under the label of Integrated Conservation and Development Projects (ICDPs). They aimed to solve the dilemma of 'people versus parks' (Kremen et al. 1994; Roth 2004) by linking biodiversity conservation in protected areas with local social and economic development in buffer zones. The Huai Kha Kaeng Wildlife Sanctuary in Thailand was one of the first places where buffer zones were undertaken (Sato 1998). The project covered more than 20 ethnic Karen villages which had been resettled from the park into the buffer zone areas in the 1970s. Overall, however, the results of ICDPs have been mixed. Critical examination of ICDPs for their impact on both conservation and development objectives reveals that ICDPs only work 'sometimes' and 'under some circumstances' as projects have unrealistic and contradictory goals and involve different stakeholders with very different expectations (MacKinnon 2001).

Classifications, and the zoning they support, derive substantially from standardization efforts of international organizations, in particular the World Conservation Union (IUCN) that has set benchmarks for classifying protected areas. In the past there is little doubt that national legislation and policy has been influenced by these higher level schemes. The upsurge of interest in community involvement in conservation, and ideas of sustainable use, has on the other hand, also led to revisions of IUCN protected area categories, which now include culturally modified landscapes and managed resource areas.

Administering

Decentralization reforms open up new ways of constituting community-level entities. In Thailand, for example, sub-districts with a third of the state budget, now have elected councils with two representatives from each village that overlook local government administration (Garden et al. 2006a). To the extent that decentralization empowers local representative government, and makes it accountable downwards to their constituency, communities may acquire greater autonomy over natural resource management decisions (Ribot and Larson 2005). But this need not equate to conservation (Li 2002). Conflicts, for example, may emerge between decentralization for encouraging local forest management and livelihoods versus protection of environmental services that affect larger-scale populations (Xu and Ribot 2004).

Reforms in the water sector are also creating vertical tensions with respect to jurisdictional levels on the 'spaces' scale (Figure 1). In several countries in the region, water management reforms with the creation of formally recognized sub-river and river basin organizations are providing opportunities for constructive cross-level interactions in project planning (Thomas 2005a; Garden et al. 2006b). Other aspects of how integrated water resources management is conceived, however, appear to be pulling back on these promises and recentralizing in the name of better coordination and integration (Biswas 2005). Overall, it is still too early, however, to assess the outcomes in terms of sustainability or conservation type objectives (Hirsch 2006).

Conservation planning and actions are undertaken by communities and actors with jurisdictions at much higher levels often with inadequate opportunities for cross-level interaction to inform management at different levels. Conservation in protected areas and outside them, however, remains largely disconnected. Horizontal linkages between the primary area-based administrations of government and the hierarchies more narrowly responsible for conservation are often weak. Decentralization and other institutional reforms may be just reproducing this problem at each level of the hierarchy. A significant knowledge gap is that there is very little long-term follow-up of impacts of joint conservation activities with communities by which to judge real success.

5. Theory and practice

The preceding three sections of this paper argued, in turn, that groups, resources, and spaces have scale-like characteristics that easily confound single-level models for conserving with communities. Issues of scale are at the centre of many of the critical tensions around conservation with people. Conventional approaches to conservation in large protected area systems have helped conserve biodiversity globally but have also shifted burdens unfairly on people living in those areas. The welfare, rights and interests of people affected by conservation projects and programs need to be taken into account from the beginning, starting with negotiating how conservation is to be done and through to monitoring and evaluating the effectiveness of joint management arrangements over-time. In doing so the definition of community boundaries, the objectives of mapping exercises, and the terms of agreement need to be deliberated, at more than one level, and often, more than one time. There are several outstanding gaps between conservation theory and practice related to how scale is handled (Table 2). In this section we will briefly discuss these gaps and highlight their implications, for conservation is theorized, studied and practiced.

Table 2. Four gaps between knowledge and practice in conserving with communities that in part arise from the way scale has been handled.

Gap	Conventional wisdom and theory	Experiences from practice
Representation of users	Key actors can represent their interests without constraint.	Self-representation opportunities for key actors are few and level-restricted.
Independence of resources	Manage at single level because is largely independent.	Managing for one service at one level has impacts on other services at other levels.
Perceptions of levels at which risks and benefits accrue	Local community resource users have highest stakes.	Significant stakes exist at multiple-levels.
Impacts of engagement	Community-level commitment to conservation project objectives translates into environmental improvements.	Very little long-term follow-up of impacts of joint conservation activities with communities by which to judge real success.

Conservation practice uses theory primarily as a tool of persuasion. A common discourse is that engaging in conservation will secure ‘your’ or ‘our’ livelihoods. Both state and non-governmental organizations enrol communities into participatory conservation projects without much discussion of objectives and terms. Their goal is to ensure that a certain number (and kind) of villages get involved so as to meet requirements for stakeholder engagement and ‘community-level’ participation. An assumption and hope of many such mapping and planning exercises has

been that, given an opportunity for participation, people will identify with 'communities' and be persuaded to support conservation objectives.

The scale on, and levels at which, community are defined matters. Choice of levels in part determines who will benefit from and will bear the costs of engagement in conservation activities. At any level some individuals and some groups may resist efforts to conserve in the ways promoted by state and other agencies. Scales are used to include and exclude groups from participation. Even identifying interests and stakes can be difficult when there is little or no self-representation of groups sidelined by ethnicity, class or gender. Social practices both within 'communities' and 'projects' can exclude various groups of people. Without proper representation and negotiation the benefits and burdens of conservation, planning and management are unlikely to be distributed fairly within or among levels. Well-intentioned conservation projects need to be pro-active in addressing issues of weak representation at all levels. People engage in, and resist, conservation for a wide variety of reasons. Understanding should begin here.

The theory of international environmental regimes has sought to understand how institutions emerge and transform as part of complex causal clusters of factors, including coalitions among actors, and new knowledge and interplay with existing institutions (Young 2002a, 2002b). Insights from this work are relevant for watersheds because in this context the interaction of uses and rules at multiple levels cannot be safely ignored. Conservation management practice, however, has largely been based on fixed territories through zoning and creation of parks. Management institutions within parks are integrated across resources but these do not extend beyond boundaries outside of which most resources are managed independently of each other (e.g. water, soil and timber). Resources, however, are used up, and services valued, at different spatial levels from those at which they may be ruled and managed (e.g. flood protection services, carbon sequestration). This mismatch is a source of cross-level interactions underlining the risks of the local trap (Purcell and Brown 2005). Institutions for watershed management need to be designed with the inevitability of interplay in mind.

Commons theory generated an empirical search for management by local communities and found it (Ostrom 1999). Individuals in local communities can cooperate and undertake collective action without being driven to do so by an external authority (Berkes 2002). Conventional wisdom is that local community resource users have the highest stake in the common pool resources targeted for conservation. Being identified as a group or level with high stakes, however, is not always wished for: the burdens of conservation may outweigh the benefits. But as we have seen, mountains provide habitat for human and non-human life as well as many ecosystem goods and services useful to society at multiple spatial levels. There may be significant stakes at several levels. Dividing and coordinating responsibilities among levels requires avenues for both negotiation and accountability.

Finally, the way that conservation by communities has been documented and studied, at least in the Southeast Asian region, represents a fundamental constraint on what can be said useful to practice. Little attention has been given to documenting impacts on longer-term environmental or livelihood and development outcomes. Most case studies document short term activities and anecdotal evidence to argue cases for, or against, different kinds of community engagement. Rarely have researchers gone back to old sites to see what happened. We think a lot could be learned by independent follow-up of old 'community-based' management sites.

6. Conclusions

The multi-level perspective on conserving with communities described in this paper helps better understand why the expectations of different actors are hard to satisfy and projects are perceived as failures. Some of the differences are a result of looking at the system from different levels, and others, the failure to acknowledge important cross-level interactions. Others arise from reliance on knowledge drawn from single-level theories as opposed to the tacit and articulated experiences of conservation practice.

A multi-level perspective also helps explore more deeply the institutional possibilities inherent in a multi-layered, networked and dynamic world. It starts with the assumption of no a priori reason to privilege one level, to the exclusion of others, in setting conservation objectives, or in finding ways to meet them. More open explorations should help address the practical governance problems with replicating promising instances, and creating enabling frameworks for conservation planning and management. Adopting a multi-level perspective for the purpose of analysis, however, should not be taken as a commitment to concluding the need for multi-level institutional designs.

A multi-level perspective provides a systematic way to explore a few dimensions of context. Many aspects of context, for example, culture or beliefs, are not usefully thought of in scale terms. A multi-level perspective cannot help explore these factors. Even where a dimension has intuitive scale features like geographical space, there can be other kinds of non-scale relationships between locations, for example, ridge and valley, or the left and right banks of a river (Lebel et al. 2005).

The governance challenges arising in the management of upper tributary watersheds for conservation with communities are important, not least for the people who live there. In this paper we demonstrated the benefits of not assuming at the outset that the best levels are known with respect to whom, what, where, or how, conserving with communities is to be done. At the end we see wisdom and institutional opportunities in deliberating and negotiating the next round of scale and level choices.

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